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ABSTRACT

Presented is the evaluation of a program designed to improve the skills of 2,700 handicapped students (5-16 years old) in the areas of reading and mathematics, using intensive individual and small group instruction and supplementing the special education academic program. Among findings listed are that brain-injured and physically handicapped children, particularly those in elementary grades, made significant academic gains; and that the program varied according to program site. Among recommendations noted are that receiving schools cooperate with the program teacher and teacher trainer in providing supplementary instruction, that orientation and in-service training for teachers be held throughout the year, and that teachers be provided with a curriculum package. Appended materials include a classroom observation profile and test results in tabular form. (IM)

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EVALUATION REPORT

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Supplementary Reading and Mathematics Instructional Skills Program for Handicapped Children

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Gary N. Siperstein, Ph.D.

An evaluation of a New York City School district educational project funded under Title I of the Elementary and Secondary Education Act of 1965 (PL 89-10) performed for the Board of Education of the City of New York for the 1974-75 school year.

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Dr. Anthony J. Polemeni, Director

BOARD OF EDUCATION OF THE CITY OF NEW YORK
OFFICE OF EDUCATIONAL EVALUATION
110 LIVINGSTON STREET, BROOKLYN, N. Y. 11201

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EVALUATION REPORT

Chapter I: THE PROGRAM

The Supplementary Reading and Mathematics Instructional Skills Program was conceived as a service to improve handicapped students' skills in the areas of reading and math. The program was created in response to the need that these students have for intensive individual and small group instruction. To help this need, the program was designed to supplement the special education academic program with individual and small group instruction for children two or more years behind their expected level of functioning.

The program was implemented in October 1974 and ended in June 1975. Its major objective was to improve the rate of reading and math skills of approximately 2700 Title I eligible handicapped pupils presently in special education classes. The children varied with respect to age (5 - 16 years) and type of handicap (minimally brain-injured, physically handicapped, emotionally handicapped, mentally retarded, and emotionally handicapped-neurologically impaired).

The projected frequency of students in each disability category is presented below:

Minimally brain-injured	605
Physically handicapped	217
Emotionally handicapped	692
Mentally retarded	1000
Emotionally-handicapped neurologically impaired	250

The student selection was made according to the following criteria:

- Enrollment in a tax based special education class
- Individual test performance which indicated a reading and/or math performance level 2 years or more below grade level.

In addition to these two criteria, the selection of students was based on each child's individual strengths and needs. These were determined from direct observation of the child in his/her special education class, the special education teacher's estimation of the child's functioning level, and past psychological and educational school records.

The program staff was comprised of administrative personnel (coordinator, assistant coordinators), administrative support personnel (secretaries, typists, clerks), teaching personnel (reading and math specialists), and teaching support personnel (teacher trainers, educational assistants, psychologists, guidance counselors). In general, the duties of the coordinator and the assistant coordinators were to implement the program by directing the various inservice instructional activities and directly supervising both the teacher trainers and teachers in the field. The assistant coordinators had the responsibility for ordering supplies and equipment, and planning periodic staff meetings throughout the year. The secretaries, typists, and other clerical personnel were to maintain pupil records at the central office, order supplies, and prepare staff schedules, appointments, and the payroll.

The 93 teachers in the program worked with students in small groups, providing remediation and supplementary assistance in the areas of reading and math. Through the utilization of a variety of methods and techniques, their specific goal was to improve each student's skills and achievement in the areas in which the student was weakest.

Each of the 7 teacher trainers was an overseer for 10 to 12 teachers in the field. Their specific role was to exemplify the philosophy of the multi-modality approach to the education and training of handicapped children in the areas of reading and math. Where needed, they assisted the field teachers in preparing the lessons and obtaining educational materials and diagnostic instruments. They also planned short-term workshops, individual conferences, and provided ongoing direct classroom supervision.

The psychologist and guidance counselors worked as consultants and diagnosticians for the teacher trainers and the teachers in the field. Their objective was to help children overcome learning obstacles which impede achievement in reading and mathematics. Their major focus was on the psychosocial problems many children have who are educationally retarded. Their direct services included diagnostic evaluation and counseling of both students and parents.

The general educational procedure of the program was to diagnose the child's strengths and weaknesses, and then develop a descriptive plan based on these strengths and weaknesses. Utilization was to be made of each child's own background experiences. Supplementary reading and math instruction by the

teachers was to occur in conjunction with the special education teacher's assignments. Each teacher was responsible for a pupil load of approximately 30 children. Daily activities consisted of working with small groups of 3 to 4 children for periods of between 20 and 45 minutes. In some instances, where appropriate, a child was seen individually. Teachers were to receive a variety of multi-media materials, and programmed instructional materials, such as film strips, games, and books, to be used for either group or independent work. These materials would be structured by levels allowing each student to work at his or her own level of competence simultaneously with students on other levels. Teaching techniques employing the auditory, visual and kinesthetic modes of learning were seen as the best approach to improving children's reading and math skills.

The supplementary reading and math program was designed for children with various handicapping conditions. The present report is confined to two of these groups: children with brain injury, who are enrolled in HC-30 classes, and children with a physical handicap, who are enrolled in HC-20 classes. The remaining handicap groups are the subject of separate evaluation reports.

Chapter II: EVALUATIVE PROCEDURES

In order to evaluate the impact of the supplementary reading and math instructional program on brain-injured and physically handicapped children, three evaluation objectives are addressed.

Evaluation Objective #1. To determine whether, as a result of participation in the program, the reading rate of the participant would show a statistically significant difference between the real posttest score and the anticipated posttest score.

Evaluation Objective #2. To determine whether, as a result of participation in the program, the mathematics grade of the participant would show a statistically significant difference between the real posttest score and the anticipated posttest score.

The evaluation activities, specific to these first two objectives consisted of the administration of the Wide Range Achievement Test (Level I and Level II) to all of the brain-injured children in the HC-30 classes and the physically handicapped children in the HC-20 classes who were provided with supplementary reading and math instruction. The administration took place when the child entered the instructional program, in October of 1974, and at the end of the instructional period, June 1975. Several children who entered the program late, or left the program early, were also pre- and posttested on the reading and math sections of the WRAT. The projected statistical analysis, i.e., historical regression, which was to analyze the data by comparing the real (treatment) posttest vs. anticipated (without treatment) posttest was rendered inappropriate for these reasons: (1) it was not possible to

subtract 1 from the student's pretest grade equivalent scores since students can achieve scores below the first grade level; that is, they can exhibit reading and math skills at the kindergarten or pre K level; thus, subtracting 1 from their score would give them a minus number; (2) it was difficult to determine the number of months many of the students in HC-30 and HC-20 classes have been in school since they were in a non-graded class system; (3) it was not appropriate to make the direct translation between their chronological age and their expected grade level since many of these children have been, at one time or another, hospitalized or outside of school for other reasons. Consequently, it was impossible to adequately determine each student's historical rate of growth per month, before entering the program. Therefore, in conjunction with the project coordinator and the Office of Educational Evaluation, it was decided to analyze the student's pre- and post-test scores on the Wide Range Achievement Test in a manner which was as close as possible to the State Education Department's historical regression analysis. The decision was made to employ each student's standard score on the pretest and post-test as the units of analysis. Correlated t-tests were used to assess the amount of gain between the pre- and posttest administrations. In addition to the parametric analyses conducted on the overall pre- and posttest scores for the brain-injured and physically handicapped students, separate analyses were conducted for each handicap population with respect to

sex, male vs. female, different school levels, elementary vs. junior high school, and the five different boroughs: Bronx, Brooklyn, Manhattan, Queens, and Richmond. Additional comparisons were conducted with respect to the frequency of children who scored at or below the 25th, 50th, and 75th percentile ranks on the pretest and posttest in both reading and math.

There were 822 brain-injured and physically handicapped students in the HC-30 and HC-20 classes who received supplementary reading and math instruction. Only 3% of the 822 students (that is, 27 students) were not administered a posttest. Eighteen of the 27 students who failed to receive a posttest were from HC-30 classes, while the other 9 came from HC-20 classes. The reasons for the 3% attrition are presented in the attached MIR form.

Evaluation Objective #3. To determine the extent to which the program as actually carried out, coincided with the program as described in the project proposal.

There were several evaluation activities conducted to assess whether or not the program as described in the project proposal was fully implemented. These consisted of monthly site visits to each of the schools that contained supplementary reading and math instruction, periodic interviews with each teacher trainer, the guidance counselors and psychologists, as well as periodic site visits to the central office where both the coordinator and assistant coordinators were interviewed.

During the site visits, direct observations were made of the teachers conducting individual and small group instruction. Where possible, interviews were conducted with the cooperating classroom teachers, the district bureau coordinators, and principals and assistant principals. Each site was rated with respect to materials, both commercial and teacher-made, the physical resources such as resource rooms, and the extent to which teachers had up-to-date lesson plans and assignments for each student. Furthermore, each teacher was queried with respect to the number of children that he or she serviced, the nature of the children's handicap, as well as the specific teaching techniques and materials used for each child. In addition to site visits, observations and interviews were conducted during teacher trainer meetings, and parent workshops. When possible, parents also were directly interviewed.

Chapter III: FINDINGS

Evaluation -- Objective #1:

As a result of participation in this program, the reading grade of the participant will show a statistically significant difference between the real posttest score and the anticipated posttest score.

To assess Objective 1, t-tests were conducted on each pupil's pre- and posttest standard scores on the reading subtest of the Wide Range Achievement Test. Table 1 presents the summary statistics for brain-injured students in the HC-30

Table 1

Comparison of Pretest and Posttest Reading Standard Scores for HC-30 and HC-20 Students: Means, Standard Deviations, t values

		Pretest		Posttest			
Handicap Class	N	Mean	SD	Mean	SD	t value	p level
HC-30	614*	74.25	10.64	79.29	12.85	24.91	.001
HC-20	149	79.38	14.92	87.53	17.90	10.98	.001

*Total N does not include 32 HC-30 students administered Level II of the WRAT

classes and the physically handicapped students in the HC-20 classes. Overall, students in both classes made statistically significant gains from pre- to posttesting ($p < .001$). The amount of absolute change, however, was slightly greater for the HC-20 students (6.15 standard score points) than the HC-30 students (5.05 standard score points). Table 2 presents a finer analysis of the pre- and posttest scoring by HC-30 and HC-20 students at the elementary and junior high school grade levels. Once again, all of the comparisons between the pre- and posttest scores were statistically significant. Although the difference between the pre- and posttest scores for HC-20 students at the junior high level was marginally significant, the absolute change score was above 5 standard score points. With respect to grade level, the group that exhibited the greatest change was elementary school students in HC-20 classes. While they scored highest on the pretest compared to the other groups, they also changed more significantly than the other groups. The group that performed the poorest on the pretest was the junior high school students in HC-30 classes. They also exhibited the least amount of gain from pre- to posttest.

There were 32 HC-30 students at the junior high level who were administered Level II of the Wide Range Achievement Test. These students also exhibited a significant gain in reading.

Table 2

Comparison of Pretest and Posttest Reading Standard Scores for HC-30 and HC-20 Students at the Elementary and Junior High Level: Means, Standard Deviations, t values

Handicap class	Grade Level	N	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	t value	p level
HC-30	Elementary	454	75.76	10.41	81.49	12.64	23.05	.001
	Junior High School	160	69.97	10.13	73.06	11.37	11.33	.001
HC-20	Elementary	140	79.39	15.32	87.74	18.37	10.78	.001
	Junior High School	9	79.22	6.40	84.33	7.19	2.19	.06
HC-30 (Level II test)	Junior High School (Queens)	32	77.62	11.15	84.53	12.61	7.26	.001

Additional analyses were conducted comparing the pre- and posttest performance of HC-30 and HC-20 students in each of the 5 boroughs. Table 3 presents the summary statistics and t-values for students in the HC-30 and HC-20 classes in Brooklyn, Bronx, Manhattan, Queens and Richmond. Overall, significant gains were made by students in all the boroughs. Visual inspection of the means in Table 3 indicates that it was the HC-20 students in the Bronx, Queens, and Richmond who contributed most to the overall high pretest performance of the HC-20 population. In contrast, the HC-30 students in the Bronx scored lower on the pretest than all other HC-30 students. They also exhibited the least amount of change between pre- and posttest. There was no difference between males and females on either the pre- or the posttest. Both males and females improved equally.

In order to place the significant gains made in reading by HC-30 and HC-20 students in perspective, a frequency count was made of the number of students who scored at or below the 25th, 50th, 75th and 100th percentile on both the pre- and posttests. Since these percentile rankings are based on norms generated from a normal population of children, it is possible to determine where brain-injured and physically handicapped children function in regard to their normal peers. Table 4 presents the frequency of children who fall within each of the four quartiles on the Wide Range Achievement Test. It is

Table 3

Comparison of Pretest and Posttest Reading Standard Scores for HC-30 and HC-20 Students in Each Borough: Means, Standard Deviations, t values

			Pretest		Posttest			
Borough	Handicap Class	N	Mean	SD	Mean	SD	t value	p level
Brooklyn	HC-30	165	74.19	9.78	80.07	11.66	17.08	.001
	HC-20	36	74.17	15.84	83.17	21.12	4.34	.001
Bronx	HC-30	155	70.37	8.86	73.76	10.37	12.68	.001
	HC-20	53	82.91	13.47	88.23	15.45	8.02	.001
Manhattan	HC-30	122	74.15	11.60	80.60	14.57	10.65	.001
	HC-20	21	74.48	14.68	85.29	16.83	3.97	.01
Queens	HC-30	84	79.12	10.76	83.36	12.49	8.07	.001
	HC-20	23	81.30	15.62	88.57	16.91	8.83	.001
Richmond	HC-30	68	76.76	11.16	81.98	13.89	9.30	.001
	HC-20	16	83.06	13.00	96.50	18.18	6.58	.001

Table 4

Distribution of HC-30 and HC-20 Students at or Below the 25th, 50th, 75th, and 100th Percentiles on the Reading Pretest and Posttest

	Pretest				Posttest			
Handicap Class	25th	50th	75th	100th	25th	50th	75th	100th
HC-30 (N = 646)	597	31	13	5	530	76	24	16
HC-20 (N = 149)	120	17	7	5	91	23	21	14

apparent that very few brain-injured and physically handicapped students performed at or above the 50th percentile on the pretest (3% and 8%, respectively). While both HC-30 and HC-20 students made significant gains from pre- to posttesting, only 6% of the entire HC-30 population in the program was above the 50th percentile on the posttest and only 24% of the entire HC-20 population in the program scored above the 50th percentile. A comparison of the number of HC-30 and HC-20 students that scored at or above the 25th percentile on the pre- and posttest is somewhat more encouraging. Seven percent of the HC-30 population scored at or above the 25th percentile on the pretest in comparison with 17% who scored at or above the 25th percentile on the posttest. The change is even greater for the HC-20 population in which 19% of the students scored at or above the 25th percentile on the pretest and 39% of the students scored at or above the 25th percentile on the posttest.

To summarize, in general, brain-injured students in HC-30 classes, and physically handicapped students in HC-20 classes who participated in the supplementary reading program significantly improved their reading skills. The greatest gains were observed among students enrolled in HC-20 classes at the elementary level. The least amount of change was observed among HC-30 students at the junior high school level. No differences were observed between males and females. Although both brain-injured and physically handicapped students showed significant improvement from pre- to posttesting, they still performed

below that which would be expected of an average child.

Evaluation — Objective #2:

As a result of participation in this program, the mathematics grade of the participant will show a statistically significant difference between the real posttest score and the anticipated posttest score.

To assess Objective 2, t-tests were conducted on the pupils' pre- and post-standard scores on the math subtest of the Wide Range Achievement Test. Table 5 presents the summary statistics for the brain-injured students in the HC-30 classes and the physically handicapped students in the HC-20 classes. Overall, students in both classes made statistically significant gains from pre- to posttesting ($p < .001$). In contrast to the difference between HC-30 and HC-20 students observed on the reading subtest, both groups performed equally well on the math subtest. Table 6 presents a finer analysis of the pre- and posttest scoring by HC-30 and HC-20 students at the elementary and junior high school grade levels. Once again, all the comparisons between the pre- and posttest scores were statistically significant. Similar to the findings on the reading subtest, students at the elementary level showed greater improvement than students at the junior high school level. Once again, junior high school students in HC-30 classes exhibited the least amount of gain from pre- to posttest.

There were 32 HC-30 students at the junior high school level who were administered Level II of the Wide Range

Table 5

Comparison of Pretest and Posttest Math Standard Scores for HC-30 and HC-20 Students: Means, Standard Deviations, and t values

		Pretest		Posttest			
Handicap Class	N	Mean	SD	Mean	SD	t value	p level
HC-30	614*	76.71	8.22	83.76	9.99	25.75	.001
HC-20	149	75.25	13.12	84.43	15.05	13.25	.001

*Total N does not include 32 HC-30 students administered level II of the WRAT

Table 6

Comparison of Pretest and Posttest Math Standard Scores for HC-30 and HC-20 Students at the Elementary and Junior High School Level: Means, Standard Deviations, t values

			Pretest		Posttest			
Handicap Class	Grade Level	N	Mean	SD	Mean	SD	t value	p level
HC-30	Elementary	454	77.66	8.64	85.82	10.05	24.71	.001
	Junior High School	160	74.04	6.14	77.90	7.09	10.40	.001
HC-20	Elementary	140	75.20	13.48	84.69	15.44	13.12	.001
	Junior High School	9	76.11	5.44	80.33	5.59	2.89	.02
HC-30 (Level II test)	Junior High School (Queens)	32	74.72	8.74	80.09	8.58	5.34	.001

Achievement Test. These students also exhibited a significant gain in math.

Additional analyses were conducted comparing the pre- and posttest performance of HC-30 and HC-20 students in each of five boroughs. Table 7 presents the summary statistics and t-values for students in HC-30 and HC-20 classes in Brooklyn, Bronx, Manhattan, Queens, and Richmond. Overall, significant gains were made by students in all the boroughs. Students in each of the boroughs improved equally well on the math subtest. There was no difference between males and females on the the pre- or posttest. Both males and females showed equal improvement.

In order to place the significant gains made in math by HC-30 and HC-20 students in perspective, a frequency count was made of the number of students that scored at or below the 25th, 50th, 75th, and 100th percentile on both the pre- and posttests. Since these percentile rankings are based on norms generated from a normal population of children, it is possible to determine where brain-injured and physically handicapped children function in regard to their normal peers. Table 8 presents the frequency of children who fall within each of the four quartiles on the Wide Range Achievement Test. It is apparent that very few brain-injured and physically handicapped students performed at or above the 50th percentile on the math pretest (less than 1% and 3%, respectively). While both

Table 7

Comparison of Pretest and Posttest Math Standard Scores for HC-30 and HC-20 Students in Each Borough: Means, Standard Deviations, t values

			Pretest		Posttest			
Borough	Handicap Class	N	Mean	SD	Mean	SD	t value	p level
Brooklyn	HC-30	165	76.08	8.58	84.77	10.07	15.76	.001
	HC-20	36	71.00	14.55	80.75	17.26	6.54	.001
Bronx	HC-30	155	75.22	7.05	80.29	7.96	12.15	.001
	HC-20	53	77.75	13.48	85.72	14.62	6.78	.001
Manhattan	HC-30	122	77.35	7.99	84.00	9.74	11.16	.001
	HC-20	21	71.95	8.95	83.10	12.96	5.03	.001
Queens	HC-30	84	78.88	9.72	86.55	10.45	9.22	.001
	HC-20	23	78.17	13.39	85.35	15.31	8.54	.001
Richmond	HC-30	88	77.62	7.73	85.01	11.47	9.51	.001
	HC-20	16	76.69	10.47	88.87	12.98	5.60	.001

Table 8

Distribution of HC-30 and HC-20 Students at or Below the 25th, 50th, 75th, and 100th Percentiles on the Math Pretest and Posttest

	Pretest				Posttest			
Handicap Class	25th	50th	75th	100th	25th	50th	75th	100th
HC-30 (N = 646)	609	34	3	0	515	90	35	6
HC-20 (N = 149)	136	8	3	2	107	24	12	6

HC-30 and HC-20 students made significant gains from pre- to posttesting, only 6% of the entire HC-30 population in the program was above the 50th percentile on the posttest and only 12% of the entire HC-20 population in the program scored above the 50th percentile.

A comparison of the number of HC-30 and HC-20 students that scored at or above the 25th percentile on the pre- and posttest is somewhat more encouraging. Five percent of the HC-30 population scored at or above the 25th percentile on the pretest in comparison with 20% who scored at or above the 25th percentile on the posttest. The change is even greater for the HC-20 population, which showed only 9% scoring at or above the 25th percentile on the pretest in contrast to 28% who scored at or above the 25th percentile on the posttest.

To summarize, in general, brain-injured students in HC-30 classes and physically handicapped students in HC-20 classes who participated in the supplementary math instructional program significantly improved their math skills. The greatest gains were observed among students enrolled in HC-20 classes at the elementary level. The least amount of change was observed among HC-30 classes at the junior high school level. No differences were observed between males and females. Although both brain-injured and physically handicapped students showed significant improvement from pre- to posttesting, they still performed below that which would be expected of an average child.

Evaluation -- Objective #3:

To determine the extent to which the program as actually carried out, coincided with the program as described.

Monthly site visits to each of the program sites, which involved direct observation of individual and small group instruction and interviews with the teachers, teacher trainers, psychologists, guidance counselors, as well as site visits to the teacher trainer meetings, parent workshops, and the central office, indicated that the program as stated in the project proposal was fully implemented.

During the course of the school year, site visits were made to the 37 schools which provided supplementary reading and math instruction to brain-injured and physically handicapped students in HC-30 and HC-20 classes. Table 9 presents the names and frequency of program sites in each of the five boroughs. Except for Bronx and Richmond, the program had an equal number of program sites in each of the boroughs. Table 10 presents the breakdown of program sites with respect to whether they serviced HC-30 classes, HC-20 classes, or both types of classes. It is readily apparent that most of the sites (76%) provided instruction to brain-injured children. This is in comparison to only 11% of the sites which provided supplementary reading and math instruction to physically handicapped children. The difference between the number of sites that provided instruction to HC-30 and HC-20 students is reflected in the actual

Table 9

Program Sites in Each Borough : Names and Frequencies

Borough	Names	Elementary Schools	Junior High Schools	Total Schools
Brooklyn	PS 10, PS 11, PS 21, PS 164, PS 180 PS 226, PS 332, PS 335, JHS 43	8	1	9
Bronx	PS 23, PS 24, PS 85, PS 110, PS 126 PS 160, JHS 135, IS 144, JHS 145	6	3	9
Manhattan	PS 92, PS 98, PS 158, PS 199, JHS 17	4	1	5
Queens	PS 104, PS 116, PS 118, PS 152, PS 155, PS 229, IS 53, JHS 204, IS 238	6	3	9
Richmond	PS 18, PS 20, PS 22, PS 48, IS 61	4	1	5
	TOTALS	28	9	37

Table 10

Frequency of Program Sites Servicing HC-30 Classes, HC-20 Classes, or Both

Handicap Class	Grade Level	Frequency of Sites
HC-30	Elementary	20
	Junior High School	8
HC-20	Elementary	4
	Junior High School	0
Both HC-30 and HC-20	Elementary	4
	Junior High School	1

number of HC-30 and HC-20 students enrolled in the program. Overall, 664 HC-30 students were provided with instruction compared to 158 HC-20 students. The combined total of the HC-30 and HC-20 students serviced by this program (822), equalled the projected number recommended in the project proposal. However, the actual proportion of HC-30 and HC-20 students differed from that projected in the program's proposal. The proposal projected 605 HC-30 students and 217 HC-20 students to be serviced by the program. The reason for the discrepancy, not in total population size, but in the distribution of handicap categories, was that the classes did not have a many Title I HC-20 children this year. The figures in the proposal were based on June 1 estimates by the Bureau of the Education of the Physically Handicapped (BEPH). At the beginning of the program (the months of October and November) the number of students in each class in each school fluctuated. This is to be expected of any new program. The early fluctuation in student population was in part a result of several sites beginning somewhat later than the October 1st starting date. Of the 37 sites in operation at the end of the year, 33 began in October, 2 were in operation for 4 months, and 2 were in operation for 2 months of the school year. Although some students entered the program late, or for medical or educational reasons left the program early, the average length of time for children in the program was 6½ months. This is extremely high for a program in its first year of operation.

A specific breakdown of the age and sex characteristics of the students in HC-30 and HC-20 classes at the elementary and junior high school levels is presented in Table 11. There are two interesting statistics that are evident in Table 11. First, there were 608 males and 187 females in the HC-30 and HC-20 classes. This makes the ratio of boys to girls greater than 3 to 1. Secondly, the mean age of children in HC-30 classes at the elementary level was somewhat higher than one would expect for normal children in an elementary school. In summary, the program provided instruction to children at both the elementary and junior high school levels who varied not only with respect to handicapping condition, that is, brain-injury or physical handicap, but also with respect to age and sex.

With regard to staffing pattern, there were 81 teachers and 7 teacher trainers on staff at the program's inception. Over the course of the first several months, an additional teacher trainer was added to the staff to cover an additional component of the program. During the year there was a 17% turnover rate for teachers, 14 of the original 81 teachers having left the program in mid-year. Eight of these teachers left to join a tax levy program while the other 6 resigned for personal reasons. All of the teacher positions were immediately filled. It should be noted that of the 81 teachers in the overall program, 46 (57%) provided supplementary reading and math instruction to students in HC-30 and HC-20 classes. Each

Table 11

Age and Sex Characteristics of Students in HC-30 and HC-20 Classes at the Elementary and Junior High School Levels

Handicap Class	Grade Level	Sex		Age	
		Male	Female	Mean	SD
HC-30	Elementary	362	92	10 years, 1 month	1 year, 7 months
	Junior High School	160	32	13 years, 4 months	1 year, 2 months
HC-20	Elementary	81	59	9 years, 11 months	2 years, 5 months
	Junior High School	5	4	14 years, 1 month	10 months

of the 46 teachers worked with 30 students during the course of the school year. Each teacher worked with children who ranged not only in age, but in type of handicap.

Within a given day, a teacher was apt to provide small group instruction to both brain-injured and physically handicapped or mentally retarded children. The teachers were observed providing instruction in both reading and math, however, most teachers placed greater emphasis on reading. Teachers were observed to work with children for approximately 20 - 40 minutes per session. They worked with groups ranging from 2 to 4 children. In special instances, teachers were observed in a 1 to 1 situation with children who had severe physical, academic, or emotional problems.

As part of the overall program, at the beginning of the year each teacher observed the children in their regular special education class. In addition, when possible, teachers reviewed the educational history of the child as presented in the school's records. After the teacher became familiarized with the child, the Wide Range Achievement Test was administered and children were then grouped for instruction. Before grouping the children, the teachers completed a classroom observation profile on each child (See Appendix A). Teachers found that this checklist, developed by the coordinator, was very helpful in pinpointing the strengths and weaknesses of the children. In addition to the observation checklist, teachers wrote daily lesson plans

and kept a running log of weekly educational activities. When needed, teachers had the use of a referral system for requesting psychological services from either the guidance counselor or psychologist.

The staff pattern at each site varied. For example, in some schools, there was more than one teacher in the program. In other school sites, teachers worked alone. Some teachers were even itinerant, servicing one school on Mondays, Wednesdays, and Fridays, and another school on Tuesdays and Thursdays. Some teachers reported feeling more comfortable in a work situation where they can share ideas with their peers, while others found it just as comfortable to work alone.

The materials and physical resources that the teachers had to work with varied with respect to the school site. Not all teachers had their own rooms. Some worked in a converted bathroom, others in any room that was vacant during the period in which they were supposed to provide supplementary reading and math instruction. Some teachers worked in the halls; others worked in cubicles adjoining the guidance counselor's or principal's office. The teachers who did have their own rooms, however, usually had many instructional luxuries, such as blackboards and storage areas. There also was a great deal of variability with respect to the quantity and quality of the educational materials at the teachers' disposal. Those teachers who were involved in the previous year's Title I program had the benefit of many pieces of audio-visual apparatus

in addition to accompanying software. In schools in which there was a great deal of cooperation between the supplementary program teachers and the regular special class teachers, there was the opportunity to share existing materials. In contrast, some teachers in other schools had very little commercially made material. In fact, it was not until late in the year that the program began to distribute its own purchased educational materials. In general, most of the teachers in the program relied on self-made materials, and, in fact, they found them adequate.

Except in a few instances, most teachers did not have the use of various commercially available standardized reading and math instruments other than the Wide Range Achievement Test. Up until the end of the program's school year, there was no systematic distribution of standardized tests by the central office. There were, however, several teacher trainers who distributed during teacher workshops such diagnostic instruments as the Key Math Test and the Roswell-Chall Reading Test. The teachers who did have the opportunity to use these diagnostic tests in addition to the WRAT felt that they were helpful in pinpointing the children's strengths and weaknesses. All the other teachers had to rely on the observation checklist (which most found extremely helpful) and the information that the Wide Range Achievement Test provided in assessing their children's strengths and weaknesses. It is commendable that the teachers who were not familiar and/or were not provided

with highly specialized diagnostic instruments, relied on their own observations and the Wide Range Achievement Test for their educational insights into the children's problems.

With regard to the teacher trainers, in general, they were extremely helpful in providing much needed supervision to the teachers in the field. Many times, the teacher trainers were responsible for supervising teachers who were placed, not only in different schools, but also across different boroughs.

The following is a summary of sites, teachers, and boroughs that each teacher trainer covered. Note, the 7 teacher trainers are represented by letters of the alphabet.

Teacher Trainer	Borough	Number of Schools	Number of Teachers
A	Manhattan Bronx	11	12
B	Bronx Queens	12	16
C	Richmond Queens Brooklyn	8	11
D	Queens	9	9
E	Brooklyn	9	11
F	Queens	8	10
G	Bronx	9	12

Overall, 7 teacher trainers were responsible for 81 teachers in 66 schools. As previously stated, 46 teachers worked with HC-30 and HC-20 children in 37 of the 66 schools.

The 7 teacher trainers felt that their effectiveness was diluted by the number of teachers in the number of schools

that they had to cover. Oftentimes, they could only visit a school site every week and a half and very often, had to select which schools to visit based on the degree of the teachers' needs.

Overall, the psychological staff was an effective component of the program. Although the psychologists and guidance counselors were not able to meet the needs of all the students in the program, they did respond effectively to various crisis situations. The major problem was that there were too few psychologists in relationship to the number of children and schools serviced. Furthermore, there was a great deal of overlap with respect to the types of services that the psychologists and guidance counselor provided. Through interviews with the support personnel, it was found that many times the psychologist and guidance counselor would work as teams, both in counseling children and in promoting parent participation.

The guidance counselors had as one of their major goals the involvement of parents in the program. The parent turnout at the workshops varied in each of the boroughs. Several workshops had a turnout of approximately 2 or 3 parents out of a possible 20 or 30. Several parents who were interviewed during the parent workshops felt the program to be extremely beneficial in that they could see definite progress in their children's reading and math abilities.

The program encountered several problems with respect to student selection and availability of student information.

Several teachers began working with children at the beginning of the year who were later found to be ineligible for the program. This occurred because in some schools lists of Title I eligible students were not available at the beginning of the school year. In addition to Title I eligibility, several students were selected and when tested on the Wide Range Achievement Test, found to be ineligible with respect to the selection criteria of being two or more years behind in either reading or math. For some, these selection problems arose because the supplementary reading and math teachers did not have access to the children's educational folders. It seemed up to the discretion of the regular special education teacher or the assistant principal whether or not the program teacher would be able to review the critical educational and psychological information contained in the child's school record.

Many teachers felt that the case load of 30 students per teacher was extremely large, especially at the junior high school level. Many teachers felt that the 30 student case load was difficult to handle, not because of their own inadequacies, but because of the heavy academic and psychological demands made by students who are brain-injured or physically handicapped. These problems are especially compounded at the junior high school level where children are making the difficult transition from childhood to puberty. The teachers felt that some students need to be seen more than twice a week for 45 minutes as is presently the case with a 30 student case load.

Another problem not directly controllable by the program was the nature of the relationship between the program teachers and the receiving school. Many program teachers were found to have a good relationship with the regular special education teacher, and the Bureau supervisors, as well as the regular class teachers and assistant principals and principals. In most cases, the program teacher worked alongside the special education teacher in the selection of students, development of educational prescriptions, and the continuous ongoing assessment of the child's strengths and weaknesses. In some instances, however, there was an extremely poor relationship between the program teachers and the rest of the school. This relationship was characterized by very little communication between the program teacher and the special education teacher, very little coordination of educational services, and almost no input on the part of the program teacher in the selection of the students. The level of cooperation between program and school ranged from the program teacher and teacher trainers being considered a part of the general faculty to being viewed as a necessary, but not welcome, stranger.

There was a great deal of variability with respect to the level of experience and background of the program teachers. Many teachers had extensive experience in working with children with special needs, while others were working with brain-injured or physically handicapped children for the first time. Most of the teachers, however, were specialists in the area of reading

and/or math.

To orient teachers to the educational and social problems which characterize special needs children, an inservice two-week orientation course was held at the beginning of the school year. In addition, throughout the year, teacher trainers held meetings with their respective teachers to discuss the problems that the teachers encountered. Several teachers who were hired after the program began, or who were hired in the middle of the year to fill vacancies, expressed a need for an orientation course to be held several times throughout the year. Furthermore, many competent teachers expressed the need to get together more frequently with their teacher trainers as well as coordinators and assistant coordinators. Since many of these teachers and teacher trainers were involved in "tooling up" during the year, there was very little opportunity for them to take the time to share their ideas, their problems, and respective instructional philosophies. Those teachers who instructed special needs children for the very first time indicated the greatest need for a highly regimented and periodic inservice training program.

Overall, all of the components of the program as proposed in the project proposal, were implemented. However, a good deal of variability existed with respect to the actual implementation of the various program activities.

Chapter IV: SUMMARY OF MAJOR FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

On the basis of the evaluation evidence, it is recommended that the supplementary reading and math instructional skills program for handicapped children be continued for the school year 1975-76. Systematic observation and program teacher interviews along with pre- and posttest analyses indicated that brain-injured and physically handicapped children who participated in this program, particularly those in the elementary grade levels, made statistically significant academic gains as a result of the supplementary small group instruction in reading and math. Furthermore, on-site observations and interviews revealed that the program was carried out as designed in the proposal.

In general, the program seemed to have run smoothly and efficiently after overcoming many of the problems that beset any new Title I project. While all of the components of the program were implemented, there was a good deal of variability in the manner in which each program site functioned. There was inconsistency in the nature of school cooperation, physical resources and the quantity and quality of materials utilized by each teacher. Furthermore, there was a good deal of variability with respect to the level of competence of the program teachers. In addition, the program was beset by generally pervasive problems with respect to the program teachers and the teacher trainers' work loads, the selection of target population, and

a statement and dissemination of a clear educational philosophy. All of these problems are to be expected from the implementation of a new program such as this one. On the more positive side, however, the program was implemented quickly. A good deal of enthusiasm and devotion was displayed by all personnel, and both brain-injured and physically handicapped children seemed motivated to learn during the small group instruction.

In summary, the children discussed in this evaluation were provided with supplementary support in basic rea ing and math skills. In addition, they received, when needed, the services of a psychologist and/or guidance counselor. The parents of these children were provided with the opportunity to get involved in their children's education, through parent/teacher workshops. Finally, the program teachers were supervised by reading and math specialists. An improvement of the children's abilities in reading and math was the most important result of this program.

The following are several recommendations for program changes in the coming year based on the evaluation evidence.

1. The central office should ensure that the receiving school cooperate with the program teacher and teacher trainer in providing supplementary reading and math instruction. In several instances, teachers and teacher trainers were unwelcome in the school in which they were placed. To guard against this, program personnel should develop a model of communication and a model of procedural cooperation which should be implemented in each of the receiving schools

at the beginning of the year. If there is resistance to such models by the receiving school, the administrative personnel should reevaluate the school's status in the program.

2. The program should reduce the number of schools each trainer is responsible for covering. This would alleviate the teacher trainers' heavy workload which has them cover more than 10 schools in one or more boroughs. If the program is to maintain the present number of sites next year, then additional teacher trainers are needed.

3. It is recommended that the program develop clear selection criteria for hiring supplementary reading and math teachers. During this past year the teacher selection criteria was inadequate. Many teachers were hired with no background in special education. Teacher selection should be based on the ability to work in both 1 to 1 and small group instructional situations with children with special needs.

4. Although there was a very intense 2-week orientation period at the beginning of the school year for program teachers, there was no systematic program of inservice education during the remaining school year. Teachers who entered the program after the orientation period were not able to benefit from the initial orientation sessions. It is recommended that orientation and in-service courses be periodically held throughout the year. The main goal of these recommended courses should be to help teachers deal with the problems presented by different disability groups. Inservice training not only would help teachers deal with their immediate problems

and needs with respect to instructing children with various special needs, but would also help clarify their role in the program. Some teachers saw themselves as supplementary reading and math teachers following the guidelines of the regular class teachers, while others took on the role of a remediation specialist.

6. It is recommended that teacher trainers meet on a regular basis with their program teachers. Such weekly or biweekly meetings would provide an opportunity for all the program teachers to discuss their individual successes as well as failures. These meetings should also facilitate stronger group feelings among the teachers since many work alone in the school and easily feel isolated from the rest of the program. Informal meetings conducted on a regular basis with the coordinator and/or assistant coordinator in attendance would contribute immeasurably to the psychological cohesiveness of the program. A feeling of camaraderie is sorely needed in the program, which literally is physically spread across five boroughs.

7. It is recommended that at the beginning of the year, preferably during the initial orientation session, the program provide teachers with a curriculum package which would include an assortment of reading and math materials and diagnostic instruments. Additional materials and instruments should be distributed to teachers according to their particular needs. Special emphasis should be placed on developing packages of

material specific not only to the teachers' needs but also to the children's needs. Children at the elementary grade level are in need of materials quite different from children at the junior high school level. Specifically, students at the junior high school level have a greater need for career oriented materials.

8. It is recommended that teachers be screened in the beginning of the year according to their preference and desire to work alone or with a peer. Many teachers worked alone in the schools. Through teacher interviews, it was found that some teachers preferred to work in a situation where they could share ideas with a peer, whereas others found working alone equally desirable.

9. It is recommended that a smaller number of junior high students be assigned to each supplementary reading and math teacher. The program teachers found that a case load of 30 junior high students was very difficult to handle. This was at least in part responsible for the junior high students showing the least amount of change over the school year as compared with the other age groups.

10. It is recommended that students at the junior high school level be selected for participation in the program during the early part of the seventh grade. This would provide program teachers the opportunity to follow through with supplementary reading and math instruction when the students

continue into the eighth grade. It is likely that students at the junior high level need a minimum of 2 years of intensive supplementary reading and math instruction before realizing any meaningful academic gains.

APPENDIX A

Florence M. Sapiro - Coordinator

ESEA TITLE I - SUPPLEMENTARY READING AND MATHEMATICS INSTRUCTIONAL SKILLS PROGRAM FOR HANDICAPPED CHILDREN - Function #0959305

CLASSROOM OBSERVATION PROFILE

SCHOOL _____ CLASS TEACHER _____ ROOM _____ DATE/TIME _____

NAME OF STUDENT _____ AGE _____

LESSON _____ ESEA TEACHER _____

A) SOCIAL-EMOTIONAL-ADAPTIVE

1. Attention span.
2. Hyperactive and/or nervous habits.
3. Behavior during transitions.
4. Peer relations, teacher-student relations.
5. Unpredictable behavior.
6. Inappropriate responses, poor judgement, or poor recovery.
7. Successful reinforcer used.
8. Independent.

B) COMMUNICATION-LANGUAGE (Receptive, Conceptual, Expressive)

1. Speech difficulties; articulation, reversals of sounds, syllables, few words and more gestures.
2. Follows directions.
3. Listening comprehension.
4. Poor sound discrimination and/or overly distracted by sounds.
5. Language oriented child?

C) VISUAL-PERCEPTUAL

1. Squints, tilts head or paper extremely, wears glasses.
2. Many writing/copying reversals.
3. Spatial l/r orientation.
4. Form/letter/word discrimination.

D) PERCEPTUAL-MOTOR, MOTOR COORDINATION

1. Moves about room hesitantly, bumps into people, things.
2. Body movements coordination jerky; balance.
3. Rhythm, poor sense of time (passage).
4. Eye/hand coordination; manual dexterity.
5. L/r and up/down discrimination in physical activities.
6. Motor control-stopping, change of pace.

E) ACADEMIC/EDUCATIONAL

1. Ability to complete tasks (slow or quick).
2. Ability to organize work and/or materials.
3. Wide variation in performance day to day?
4. Specific disabilities: reading - spelling - arithmatic.
5. Specific abilities, hobbies, etc.

Suggested learning mode:_____

_____

_____

_____

and grouping:_____

_____

_____

_____

Use Table 30C. for norm referenced achievement data not applicable to tables 30A. and 30B.

30C. Standardized Test Results

In the table below, enter the requested information about the tests used to evaluate the effectiveness of major project components/activities in achieving desired objectives. Before completing this form, read all footnotes. Attach additional sheets if necessary.

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Component Code	Activity Code	Test Used[1]	Form		Level		Total N[2]	Group ID[3]	Number Tested		Pretest			Posttest			Statistical Data		
			Pre	Post	Pre	Post			N[4]	Score Type[5]	Date	Mean	SD[6]	Date	Mean	SD[6]	Test[7]	Value[8]	Level[9]
6 0 8 6 1	7 1 5	WRAT 65	-	-	1	1	630	HC-30	614	4	11/74	74.25	10.64	5/75	79.29	12.85	t	24.91	p< .001
6 0 8 6 1	7 1 5	WRAT 65	-	-	2	2	34	HC-30	32	4	"	77.62	11.15	"	84.53	12.61	t	7.26	p< .001
6 0 9 6 1	7 1 5	WRAT 65	-	-	1	1	630	HC-30	614	4	"	76.71	8.22	"	83.76	9.99	t	25.75	p< .001
6 0 9 6 1	7 1 5	WRAT 65	-	-	2	2	34	HC-30	32	4	"	74.72	8.74	"	80.09	8.58	t	5.34	p< .001
6 0 8 6 1	7 1 5	WRAT 65	-	-	1	1	158	HC-20	149	4	"	79.38	14.92	"	87.53	17.90	t	10.98	p< .001
6 0 8 6 1	7 1 5	WRAT 65	-	-	2	2	0	HC-20	0	4									
6 0 9 6 1	7 1 5	WRAT 65	-	-	1	1	158	HC-20	149	4	"	75.25	13.12		84.43	15.05	t	13.25	p< .001
6 0 9 6 1	7 1 5	WRAT 65	-	-	2	2	0	HC-20	0	4									

1/ Identify Test Used and Year of Publication (MAT-58; CAT-70, etc.)
2/ Total number of participants in the activity
3/ Identify the participants by specific grade level (e.g., grade 3, grade 5). Where several grades are combined, enter the last two digits of the component code.
4/ Total number of participants included in the pre and post test calculations.
5/ 1 = grade equivalent; 2 = percentile rank; 3 = Z Score; 4 = Standard score (publisher's); 5 = stanine; 6 = raw score; 7 = other.
6/ S.D. = Standard Deviation
7/ Test statistic (e.g., t; F; X^2).
8/ Obtained value
9/ Specify level of statistical significance obtained (e.g., $p \leq .05$; $p \leq .01$).

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OFFICE OF EDUCATIONAL EVALUATION - DATA LOSS FORM

(attach to MIR, item #30) Function # 09-59605 (c)

In this table enter all Data Loss information. Between MIR, item #30 and this form, all participants in each activity must be accounted for. The component and activity codes used in completion of item #30 should be used here so that the two tables match. See definitions below table for further instructions.

Supplementary Reading and Mathematics Instructional Skills Program for Handicapped Children.

Component Code					Activity Code			(1) Group I.D.	(2) Test Used	(3) Total N	(4) Number Tested/ Analyzed	(5) Participants Not Tested/ Analyzed		(6) Reasons why students were not tested, or if tested, were not analyzed	
												N	%		Number/ Reason
6	0	8	6	1	7	1	5	HC-30	WRAT 65	664	646	18	2.8		
6	0	8	6	1	7	1	5	HC-20	WRAT 65	158	149	9	6.0		
6	0	9	6	1	7	1	5	HC-30	WRAT 65	664	646	18	2.8	SEE ATTACHED FORM	
6	0	9	6	1	7	1	5	HC-20	WRAT 65	158	149	9	6.0		

(1) Identify the participants by specific grade level (e.g., grade 3, grade 9). Where several grades are combined, enter the last two digits of the component code.
(2) Identify the test used and year of publication (MAT-70, SDAT-74, etc.).
(3) Number of participants in the activity.
(4) Number of participants included in the pre and posttest calculations found on item#30.
(5) Number and percent of participants not tested and/or not analyzed on item#30.
(6) Specify all reasons why students were not tested and/or analyzed. For each reason specified, provide a separate number count. If any further documentation is available, please attach to this form. If further space is needed to specify and explain data loss, attach additional pages to this form.

Function No. 09-59605 (c)

Data Loss Form

Handicap Class (Group ID)	Reasons Why Students Were Not Tested, Or if Tested, Were Not Analyzed	Number of Students
HC-30 N = 18	Incomparable Pre-Posttesting	3
	In Program Less Than 1 Month (No Post Scores)	5
	Untestable - Physical Handicap	1
	Transferred to Other Special Agency	6
	Left School Without Notice	3
HC-20 N = 9	In Program Less Than 1 Month (No Post Scores)	1
	Untestable - Physical Handicap	2
	Discharged - Medical Reasons	5
	Left School Without Notice	1